Notice of Allowability	Application N .	Applicant(s)	
	10/049,719	KIM ET AL.	
	Examiner	Art Unit	
	Therese Barber	2882	

-- Th MAILING DATE of this communication appears on the cover she t with the c rrespondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to *the amendment received on 9 February 2004*.

2. ☒ The allowed claim(s) is/are *1-54*.

3. ☒ The drawings filed on *13 February 2002* are accepted by the Examiner.

4. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
   a) ☒ All b) ☐ Some* c) ☐ None of the:
      1. ☐ Certified copies of the priority documents have been received.
      2. ☐ Certified copies of the priority documents have been received in Application No. _____ .
      3. ☒ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

   * Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.

6. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
   (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
      1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
   (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.

   Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).

7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachm nt(s)

1. ☒ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO-1449 or PTO/SB/08), Paper No./Mail Date _____
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☐ Interview Summary (PTO-413), Paper No./Mail Date _____ .
7. ☒ Examiner's Amendment/Comment
8. ☐ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____.

EXAMINER'S AMENDMENT

1. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

The application has been amended as follows:

IN THE CLAIMS:

Claim 48 (amended):

-- A wavelength division multiplexing (WDM) optical transmission system having a predetermined channel spacing and a predetermined number of channels, comprising:

a transmitting terminal for providing a plurality of optical signals respectively having different wavelengths; a multiplexer connected to the transmitting terminal and adapted to multiplex the optical signals;

a plurality of fiber optic cables each including a plurality of connected optical fibers, each of the connected optical fibers including a first optical fiber exhibiting a first dispersion value and a first dispersion slope in a predetermined operating wavelength range while having a first length and a first effective area, a second optical fiber exhibiting a second dispersion value and a second dispersion slope at the predetermined operating wavelength range while having a second length and a second effective area, a third optical fiber exhibiting the first dispersion value and the first dispersion slope at the predetermined operating wavelength range while having a third length and the first

effective area, the first optical fiber, the second optical fiber, and the third optical fiber being connected to one another in this order;

connecting means for interconnecting the fiber optic cable; optical amplifiers for amplifying the optical signal being transmitted through the fiber optic cables;

a demultiplexer for demultiplexing the optical signal transmitted through the fiber optic cables; and

a receiving terminal connected to the demultiplexer and adapted to receive the demultiplexed optical signal. --

Authorization for this examiner's amendment was given in a telephone interview with Nicole A. Ressue on 24 May 2004.

Allowable Subject Matter

2. Claims 1-54 are allowed.

3. The following is an examiner's statement of reasons for allowance:

Regarding claims 1-7 and 44-45, the claims are allowable over the prior art of record for at least the reason that the prior art fails to teach or to reasonably suggest an optical fiber cable for utilization in a wavelength division multiplexing optical transmission system that includes a plurality of connected optical fibers, wherein the plurality of optical fibers with different lengths and different effective areas exhibit different dispersion values and different dispersion slopes while operating at a predetermined wavelength range, as set forth in the claimed combination.

Regarding claims 8-25, the claims are allowable over the prior art of record for at least the reason that the prior art fails to teach or to reasonably suggest an optical fiber

cable for utilization in a wavelength division multiplexing optical transmission system that includes a plurality of connected optical fibers wherein each of the connected optical fibers is comprised of a first optical fiber that has a first length and a first effective area are while exhibiting a first dispersion value and a first dispersion slope; and a second optical fiber that has a second length and second effective area while exhibiting a second dispersion value and a second dispersion slope while operating at a predetermined wavelength range, as set forth in the claimed combination.

Regarding claims 26-43, the claims are allowable over the prior art of record for at least the reason that the prior art fails to teach or to reasonably suggest an optical fiber for utilization in a wavelength division multiplexing optical transmission system that includes the plurality of connected optical fibers that is comprised of a first optical fiber, a second optical fiber and a third optical fiber that have different lengths; wherein the first and third optical fibers have different lengths but the third optical fiber has the effective core area of the first optical fiber while exhibiting the dispersion value and dispersion slope as the first optical fiber; and wherein the second optical fiber has a second length and a second effective area while exhibiting a second dispersion value and a second dispersion slope while operating at a predetermined wavelength range when the first, the second and the third optical fibers are connected to one another in this order, as set forth in the claimed combination.

Regarding claims 46 and 49-50, the claims are allowable over the prior art of record for at least the reason that the prior art fails to teach or to reasonably suggest a wavelength division multiplexing optical transmission system comprised of a transmitting terminal, a multiplexer, optical amplifiers, a demultiplexer, a receiving

terminal and a plurality of connected optical fibers wherein the plurality of optical fibers have different lengths and different effective areas while exhibiting different dispersion values and different dispersion slopes while operating at a predetermined wavelength range, as set forth in the claimed combination.

Regarding claims 47 and 51-52, the claims are allowable over the prior art of record for at least the reason that the prior art fails to teach or to reasonably suggest a wavelength division multiplexing optical transmission system comprised of a transmitting terminal, a multiplexer, optical amplifiers, a demultiplexer, a receiving terminal and a plurality of connected optical fibers wherein each of the connected optical fibers is comprised of a first optical fiber that has a first length and a first effective area are while exhibiting a first dispersion value and a first dispersion slope; and a second optical fiber that has a second length and second effective area while exhibiting a second dispersion value and a second dispersion slope while operating at a predetermined wavelength range, as set forth in the claimed combination.

Regarding claims 48 and 53-54, the claims are allowable over the prior art of record for at least the reason that the prior art fails to teach or to reasonably suggest an optical fiber cable for utilization in a wavelength division multiplexing optical transmission system comprised of a transmitting terminal, a multiplexer, optical amplifiers, a demultiplexer, a receiving terminal and a plurality of fiber optic cables that each include a plurality of connected optical fibers, wherein each of the connected optical fibers include a first optical fiber, a second optical fiber and a third optical fiber that have different lengths; wherein the first and third optical fibers have different lengths but the third optical fiber has the effective core area of the first optical fiber while exhibiting the

dispersion value and dispersion slope of the first optical fiber; and wherein the second optical fiber has a second length and a second effective area while exhibiting a second dispersion value and a second dispersion slope while operating at a predetermined wavelength range when the first, the second and the third optical fibers are connected to one another in this order, as set forth in the claimed combination.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

4. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Way (USPN 6,366,728 B1) discloses a composite optical fiber transmission line that includes a standard single-mode fiber, a nonzero dispersion-shifted fiber and a dispersion compensating fiber that provides improved data rate and bandwidth across a range of optical wavelengths while maintaining acceptable or minimal levels of chromatic dispersion.

Bhagavatula (USPN 6,404,964 B1) discloses a unitary dispersion managed optical fiber, preferably a single-mode fiber with total dispersion, that provides distributed amplification.

Chraplyvy (USPN 5,327,516) discloses an optical fiber for utilization in WDM systems, which exhibits a chromatic dispersion ranging from 1.5 ps/nm-km to 4 ps/nm-km at a wavelength of 1,550 nm.

Metter and Miller review the theory and practice of multimode and single-mode optical fiber splicing.

Forghieri, Tkach and Chraplyvy disclose a method for designing unequal channel spacings in a WDM system.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Therese Barber whose telephone number is (571) 272-2486. The examiner can normally be reached on 8:30 a.m. to 6:30 p.m. with alternative Fridays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward Glick can be reached on (571) 272-2490. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

DAVID V. BRUCE
PRIMARY EXAMINER

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